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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,277	02/19/2002	Adnan Kavak	SAMS01-00171	3424

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EXAMINER

MILLS, DONALD L

ART UNIT PAPER NUMBER

2616

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/078,277

Applicant(s)

KAVAK ET AL.

Examiner

Donald L. Mills

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,9-13,16 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 4,5,7,8,14,15,17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6, 9-13, 16, and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chheda (US 6,996,056 B2) in view of Saunders (6,031,877).

Regarding claims 1, 11, and 21, Chheda discloses a method and apparatus for orthogonal code management in CDMA system using smart antenna technology, which comprises:

A database capable of storing R active wireless terminal records, each said R active wireless terminal records containing: an active orthogonal code used to communicate with one of said wireless access terminals (Referring to Figures 2 and 3B, a cell includes a base station transceiver system 204 that communicates with mobile stations utilizing CDMA in which communication channels between the BTS and each mobile station is created by one of a group of orthogonal codes (stored) using smart beamforming antennas with preselected coefficients.

See column 5, lines 14-17; column 8, lines 49-54; and column 11, lines 17-29;) and

Chheda does not disclose the *controller associated with said database capable of receiving a notification that a new wireless access terminal is accessing said base station and, in response to said notification, comparing said each of said R active wireless terminal records to new downlink beamforming coefficients suitable for forming a downlink transmit beam for*

Art Unit: 2616

transmitting to said new wireless access terminal and, in response to said comparison, determines at least one active wireless terminal record containing corresponding downlink beamforming coefficients that have the least correlation with said new downlink beamforming coefficients.

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array which stores received information with a predictive filter that predicts the future transmission; combines the previously received information; and the predicted information to generate beamforming coefficients for weighting information to be transmitted subsequently from the array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to adjust the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Regarding claims 2, 12, and 22, the primary reference further teaches *wherein said controller assigns an active orthogonal code in said at least one active wireless terminal record to be used in downlink transmissions to said new wireless access terminal* (Referring to Figures 3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to create a communication channel with BTS 302. Since there are no unused orthogonal codes that are available for creating a communication channel with the mobile station 304 an orthogonal code is reused by the mobile station with corresponding beamforming coefficients. See column 12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Art Unit: 2616

Regarding claims 3, 13, and 23, the primary reference further teaches *wherein said base station uses up to K orthogonal codes for said downlink transmission and said controller compares said each of said R active wireless terminal records to said new downlink beamforming coefficients in response to a determination that all of said K orthogonal codes are in use* (Referring to Figures 3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to create a communication channel with BTS 302. Since there are no unused orthogonal codes that are available for creating a communication channel with the mobile station 304 an orthogonal code is reused by the mobile station with corresponding beamforming coefficients. The table tracks all antennas as well as tracking the beamwidth. See column 12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Regarding claims 6, 10, 16, and 20 as explained above in the rejection statement of claims 1 and 11; Chheda and Saunders teach all of the claim limitations of claims 1 and 11 (parent claims). Chheda further teaches *wherein said base station is operable to communicate in S sectors of a cell site associated with said base station and said base station uses up to K orthogonal codes in each of said S sectors for said downlink transmissions* (Referring to Figures 3A, 3B, and 3C, a mobile station is traveling into zone 2 and is requiring an orthogonal code to create a communication channel with BTS 302. Since there are no unused orthogonal codes that are available for creating a communication channel with the mobile station 304 an orthogonal code is reused by the mobile station with corresponding beamforming coefficients. The table tracks all antennas as well as tracking the beamwidth to track interference. See column 12, lines 11-20; column 12, lines 1-11; and column 11, lines 17-29.)

Art Unit: 2616

Chheda does not disclose *wherein said controller compares said each of said R active wireless terminal records to said new downlink beamforming coefficients in response to a determine that all of said K orthogonal codes are in use in a first sector in which said new wireless access terminal is accessing said base station.*

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array which stores received information with a predictive filter that predicts the future transmission; combines the previously received information; and the predicted information to generate beamforming coefficients for weighting information to be transmitted subsequently from the array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to adjust the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Regarding claims 9 and 19 as explained in the rejection statements of claims 1 and 11, Chheda and Saunders teach all of the claim limitations of claims 1 and 11 (parent claims).

Chheda does not disclose *wherein said controller receives said new downlink beamforming coefficients from a beamforming controller that determines said new downlink beamforming coefficients from an uplink signal transmitted by said new wireless access terminal.*

Saunders teaches an apparatus and method for adaptive beamforming in an antenna array which stores received information with a predictive filter that predicts the future transmission;

Art Unit: 2616

combines the previously received information; and the predicted information to generate beamforming coefficients for weighting information to be transmitted subsequently from the array of adaptive antenna elements (See column 2, lines 49-63.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the adaptive beamforming of Saunders in the system of Chheda. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to adjust the beamforming coefficients of Chheda's antenna array (See column 8, lines 60-64) in an efficient and straightforward manner as taught by Chheda (See column 1, lines 29-43.)

Allowable Subject Matter

3. Claims 4, 5, 7, 8, 14, 15, 17, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Mills whose telephone number is 571-272-3094. The examiner can normally be reached on 8:00 AM to 4:30 PM.

Art Unit: 2616

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donald L Mills

Dem

September 15, 2006

Seema S. Rao
SEEMA S. RAO 9/17/06
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600